Name:_____ Date:_____

Algebra 2 CC: Rationalizing a Denominator

To rationalize the denominator of a fraction means to write the fraction as an equivalent fraction with a denominator that is a rational number.

How do we write the fraction $\frac{3}{2+\sqrt{6}}$ in simplest form, that is, with a rational denominator? To do so, we must multiply numerator and denominator of the fraction by some numerical expression that will make the denominator a rational number.

Developing Skills

In 3–38, rationalize the denominator and write each fraction in simplest form. All variables represent positive numbers.

3. $\frac{1}{\sqrt{3}}$ **4.** $\frac{5}{\sqrt{10}}$ **5.** $\frac{4}{\sqrt{2}}$ **6.** $\frac{4}{2\sqrt{3}}$

7. $\frac{15}{5\sqrt{3}}$ **8.** $\frac{4}{8\sqrt{6}}$ **9.** $\frac{12}{\sqrt{27}}$ **10.** $\frac{6}{\sqrt{12}}$

11. $\frac{8}{\sqrt{24}}$ **12.** $\frac{2\sqrt{2}}{4\sqrt{3}}$ **13.** $\frac{5\sqrt{5}}{15\sqrt{2}}$ **14.** $\frac{\sqrt{24}}{2\sqrt{6}}$

15. $\frac{1}{3+\sqrt{5}}$ **16.** $\frac{1}{5-\sqrt{2}}$ **17.** $\frac{1}{1+\sqrt{3}}$ **18.** $\frac{4}{3-\sqrt{3}}$

19. $\frac{3}{1+\sqrt{5}}$ **20.** $\frac{4}{4+\sqrt{7}}$ **21.** $\frac{3}{\sqrt{5}-2}$ **22.** $\frac{9}{\sqrt{7}+2}$

23. $\frac{\sqrt{2}}{2-\sqrt{2}}$ **24.** $\frac{6}{3+\sqrt{3}}$ **25.** $\frac{\sqrt{5x}}{\sqrt{5x}-2}$ **26.** $\frac{\sqrt{20y}}{y\sqrt{5}+1}$

27. $\frac{2+\sqrt{2}}{3-\sqrt{2}}$ **28.** $\frac{6-\sqrt{7}}{4-\sqrt{7}}$ **29.** $\frac{\sqrt{10}-1}{\sqrt{10}+1}$ **30.** $\frac{7+\sqrt{5}}{7-\sqrt{5}}$

31. $\frac{a+2}{b-\sqrt{2}}$ **32.** $\frac{2\sqrt{x}-5\sqrt{y}}{\sqrt{x}+\sqrt{y}}$ **33.** $\frac{4}{\sqrt{z}+8}$ **34.** $\frac{\sqrt{a}}{\sqrt{a}-2}$

35. $\frac{2}{\sqrt{x}}+\frac{2}{\sqrt{y}}$ **36.** $\frac{1}{\sqrt{x}+6}-\frac{2}{\sqrt{6}}$ **37.** $\frac{2\sqrt{a}}{\sqrt{b}}+\frac{2\sqrt{b}}{\sqrt{a}}$ **38.** $\frac{3}{x+\sqrt{2}}+\frac{5}{\sqrt{x}}$